percent foreground super pixels, and the boundary layer mask may be a deter mined percentage of foreground and background colors so that it can be served as alpha channel for possible composition of the segmented foreground scene into a totally difference background. For example a pixel in the boundary layer mask may be 20 percent from the foreground and 80 percent from the background. The determined percentage of both background and foreground pixels may provide enhanced clarity for thin structures such as hair. The relative percentages of foreground and background colors for each pixel in the boundary layer mask may be determined by various boarder matting processes know in the art such as a closed-form matting approach as described in Levin, A. et al., A Closed Form Solution to Natural Image Matting, IEEE Conference on Computer Vision and Pattern Recognition, 2006. FIGS. **13-15** illustrate an example embodiment of the setting matting layers. FIG. **13** illustrates an example of an original image. FIG. **14** illustrates an example of a tri-map of the original image, in which white may be the background layer mask, black may be the boundary layer mask, and the grey may be the foreground layer mask. FIG. **15** illustrates an example of the matting layer result on the original image. When the matting layers may be applied to the original image the super pixels for each area, e.g. foreground, background, and boundary are drawn from the representative focal image in which the area is most in focus.

[0047] The grouping of pixels into super pixels prior to segmentation allows for a much more efficient calculation process. The segmentation of super pixels based on both focal measure and color probability allows for more reliable and efficient calculations. Selection of a focal frame may allow for user input to the segmentation process resulting in segmentation tailored to the user preferences with little burden to the user.

[0048] As described above, FIG. **3** illustrates a flowchart of an apparatus **20**, method, and computer program product according to example embodiments of the invention. It will be understood that each block of the flowchart, and combinations of blocks in the flowchart, may be implemented by various means, such as hardware, firmware, processor, circuitry, and/or other communication devices associated with execution of software including one or more computer program instructions. For example, one or more of the procedures described above may be embodied by computer program instructions. In this regard, the computer program instructions which embody the procedures described above may be stored by a memory device **24** of an apparatus employing an embodiment of the present invention and executed by a processor **22** of the apparatus. As will be appreciated, any such computer program instructions may be loaded onto a computer or other programmable apparatus (e.g., hardware) to produce a machine, such that the resulting computer or other programmable apparatus implements the functions specified in the flowchart blocks. These computer program instructions may also be stored in a computer-readable memory that may direct a computer or other programmable apparatus to function in a particular manner, such that the instructions stored in the computer-readable memory produce an article of manufacture the execution of which implements the function specified in the flowchart blocks. The computer program instructions may also be loaded onto a computer or other programmable apparatus to cause a series of operations to be performed on the computer or other programmable apparatus to produce a computer-implemented process such that the instructions which execute on the computer or other programmable apparatus provide operations for implementing the functions specified in the flowchart blocks.

[0049] Accordingly, blocks of the flowchart support combinations of means for performing the specified functions and combinations of operations for performing the specified functions for performing the specified functions. It will also be understood that one or more blocks of the flowchart, and combinations of blocks in the flowchart, can be implemented by special purpose hardware-based computer systems which perform the specified functions, or combinations of special purpose hardware and computer instructions.

[0050] In some embodiments, certain ones of the operations above may be modified or further amplified. Furthermore, in some embodiments, additional optional operations may be included, such as illustrated by the dashed outline of blocks **312**, **314**, **316**, **323**, **324**, **330**, and **332** in FIG. **3**. Modifications, additions, or amplifications to the operations above may be performed in any order and in any combination.

[0051] Many modifications and other embodiments of the inventions set forth herein will come to mind to one skilled in the art to which these inventions pertain having the benefit of the teachings presented in the foregoing descriptions and the associated drawings. Therefore, it is to be understood that the inventions are not to be limited to the specific embodiments disclosed and that modifications and other embodiments are intended to be included within the scope of the appended claims. Moreover, although the foregoing descriptions and the associated drawings describe example embodiments in the context of certain example combinations of elements and/or functions, it should be appreciated that different combinations of elements and/or functions may be provided by alternative embodiments without departing from the scope of the appended claims. In this regard, for example, different combinations of elements and/or functions than those explicitly described above are also contemplated as may be set forth in some of the appended claims. Although specific terms are employed herein, they are used in a generic and descriptive sense only and not for purposes of limitation.

1. A method comprising:

receiving a set of focal stack images;

images;

grouping each of a plurality of pixels for which the focal measure was calculated into a plurality of super pixels;

calculating a focal measure for each of a plurality of the super pixels;

segmenting a respective focal stack image based on the focal measures of the plurality of super pixels;

calculating a color probability for respective super pixels; and

segmenting the respective focal stack image based on the color probability of respective super pixels.

2. A method according to claim **1** further comprising:

selecting a representative plurality of focal images from the set of focal stack images.

3. A method according to claim **1** further comprising:

aligning the set of focal stack images.

4. A method according to claim **1** further comprising:

receiving a selection of a focus frame;

wherein the segmenting the respective focal stack image based on focal measure is further based on the selected focus frame; and